

AD 665377

*Geophysical Data Report*

**GEO MAGNETIC DATA  
BANGKOK, THAILAND — JULY-SEPTEMBER 1966**

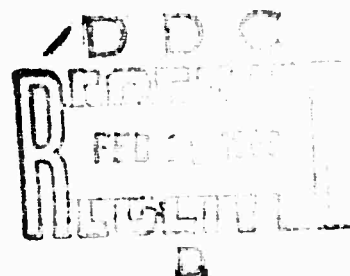
By: DOUGLAS J. BARNES      JOHN CHAPMAN

*Prepared for:*

U.S. ARMY ELECTRONICS COMMAND  
FORT MONMOUTH, NEW JERSEY 07703

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BANGKOK, THAILAND



**STANFORD RESEARCH INSTITUTE  
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September 1967

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*Prepared for:*

U. S. ARMY ELECTRONICS COMMAND  
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CONTRACT DA-36-034 AMC-00040(E)  
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*By:* DOUGLAS J. BARNES      JOHN CHAPMAN

*SRI Project 4240*

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## I INTRODUCTION

Geomagnetic observations are being carried out at the Electronics Laboratory of the Military Research and Development Center (MRDC), a joint Thailand-United States organization at Bangkok, Thailand. The cooperation and participation of the staff members of the Thailand Ministry of Defense and the support of the United States Advanced Research Projects Agency and the United States Army Electronics Laboratory have made it possible for the data presented in this report to be accumulated.

The information about the site in Table I is pertinent.

Table I  
GEOMAGNETIC SITE AT BANGKOK, THAILAND

Geographic		Geomagnetic		DIP *	Declination *
Latitude	Longitude	Latitude	Longitude		
13.72°N	100.57°E	2.5°N	169.83°E	10°27'N	0°10'W

The equipment at the site consists of the following:

Instrument: Varian V-4938A Rubidium Magnetometer

Full-Scale Sensitivity: 100γ (10<sup>5</sup>γ = 1 gauss)

Chart Speed: One inch per hour

Time Scale: Local time GMT + 7 hours

Range: Step-variable, in 90γ increments.

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\* Values obtained from the Geodesy Department, Ministry of Defense, Bangkok, Thailand.

## II DISCUSSION

The data contained in this Bulletin are obtained with a Varian V-4938A rubidium magnetometer. The data base is available in two forms: (1) the continuous magnetogram recording and (2) a digital printout every 2 minutes, both measuring the total geomagnetic field intensity (F).

The hourly mean values of the total geomagnetic field intensity are given in Tables II through IV and are obtained by calculation from the digital data. The tabulation is for local mean time (GMT + 7 hours). The monthly mean values vs. local time of day are given in the bottom line of the tables and plotted in Figs. 1 through 3.

The Varian chart recorder used with the V-4938A magnetometer has an automatic range-changing system that shifts the range of the recording by 90γ when either chart extremity is reached. In Fig. 4 et seq. the range of F shown at the left of the chart is for the beginning of the day.

Magnetograms with a mean local time scale (GMT + 7 hours), showing disturbed days are given as follows:

- (1) Figures 4 through 6--the three most disturbed days of the month.
- (2) Figures 7 through 9--other days of interest--e.g., those showing a sudden commencement, or highly disturbed ( $k_p \geq 5$ ).

Table II

## MEAN HOURLY TOTAL GEOMAGNETIC FIELD INTENSITY (F) AT BANGKOK - -JULY, 1966

* Day	Hr	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	761	759	752	751	750	750	750	750	758	761	772	785	788	785	784	771	762	751	752	749	755	761	752	752	754
2	753	748	758	755	756	756	766	773	775	775	775	782	784	781	776	766	768	759	756	760	764	763	761	760	760
3	760	756	760	760	761	760	765	770	777	783	793	790	790	786	787	787	781	777	763	755	755	758	759	758	758
4	757	758	759	760	761	762	764	770	775	778	784	790	790	786	791	791	782	767	760	755	752	747	754	755	755
5	744	743	752	752	754	766	760	760	765	782	798	794	794	790	784	768	755	750	744	750	749	750	750	747	752
6	748	749	755	755	757	760	763	769	780	799	804	800	800	797	768	782	769	759	752	751	752	756	761	758	759
7	761	759	760	759	759	761	762	770	778	789	781	793	793	786	784	784	770	755	746	747	743	750	750	750	750
8	753	753	753	757	759	761	770	787	803	839	841	843	--	--	799	765	735	712	719	723	728	721	723	725	724
9	723	721	726	725	765	761	749	730	723	736	750	718	718	712	668	636	649	665	677	675	674	690	694	705	718
10	710	707	704	703	707	710	713	710	729	744	771	745	745	714	698	704	705	708	689	668	682	712	709	710	712
11	713	712	715	711	715	714	718	725	732	736	752	751	751	756	735	740	740	731	725	723	722	721	722	722	732
12	733	730	729	730	736	732	724	727	732	747	750	734	726	--	--	732	720	716	712	715	723	730	745	752	751
13	753	736	756	759	757	757	760	771	786	800	812	824	825	824	825	813	800	785	771	768	767	767	768	768	770
14	774	774	776	777	777	774	780	783	790	800	817	825	825	819	815	815	802	786	779	783	785	783	782	780	779
15	785	786	780	781	789	785	798	806	818	832	849	838	831	823	823	811	797	786	785	788	788	792	791	801	792
16	792	790	803	802	795	805	804	806	809	817	818	836	830	821	805	800	795	795	791	788	787	786	787	791	793
17	788	788	784	783	782	782	793	796	805	815	805	816	818	810	810	806	790	768	768	775	777	780	779	779	775
18	783	783	779	771	783	731	785	796	810	820	826	826	803	800	800	800	790	783	775	780	783	776	779	781	779
19	786	785	783	781	784	785	793	801	807	830	839	822	815	814	794	794	781	783	780	782	785	782	779	777	776
20	781	783	776	781	783	783	792	799	803	816	828	839	823	811	815	815	814	810	782	779	779	777	776	777	783
21	779	775	775	776	779	751	800	812	821	823	824	802	796	796	796	786	784	786	782	781	779	773	773	782	780
22	790	777	779	774	773	779	783	787	789	790	799	804	799	795	792	792	786	777	768	764	767	771	771	773	775
23	770	773	771	779	774	775	774	780	786	796	814	807	814	791	791	793	798	786	778	775	778	775	777	775	774
24	774	775	775	774	776	779	776	784	784	809	799	800	800	800	806	810	802	780	779	776	776	780	780	781	780
25	782	781	782	780	780	782	785	793	805	896	840	844	844	844	835	817	800	795	784	784	785	--	--	--	783
26	782	781	780	781	783	782	785	787	790	822	802	814	814	814	818	817	805	798	788	788	788	784	784	783	785
27	788	799	792	788	787	786	786	796	812	831	832	835	833	833	858	831	801	793	783	785	794	787	773	765	793
28	791	778	779	777	781	782	786	791	809	820	820	805	803	796	793	784	774	774	770	761	769	764	766	761	770
29	782	779	780	776	772	780	786	790	799	825	825	835	835	815	801	789	785	788	789	789	790	790	785	786	793
30	793	796	998	792	795	795	802	817	832	845	870	865	830	805	788	796	792	792	791	790	788	788	785	785	785
31	785	783	783	783	792	796	799	800	816	832	844	847	847	834	821	800	790	790	782	777	788	783	785	785	784
Mean	767	766	766	766	769	770	773	779	787	799	807	807	800	796	785	776	768	762	761	763	763	763	763	764	767

\* LOCAL TIME = GMT + 7 HOURS.

TABULATED VALUES ARE THE LAST THREE DIGITS ONLY OF THE TOTAL FIELD STRENGTH (F) IN  $\gamma$ .  
 TO OBTAIN TOTAL FIELD STRENGTH IN  $\gamma$  ADD 41,000

DB-4240-

Table II

## MEAN HOURLY TOTAL GEOMAGNETIC FIELD INTENSITY (F) AT BANGKOK -- AUGUST 1966

* Day	Hr	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	778	775	776	779	780	781	792	817	890	826	830	820	820	818	813	817	810	805	794	790	792	793	792	796	795
2	793	789	788	788	787	789	795	800	800	805	812	820	820	821	813	805	808	803	796	790	789	789	786	787	788
3	788	788	788	787	785	786	796	805	820	835	844	854	833	833	825	813	813	807	790	790	795	775	755	755	757
4	770	770	772	772	773	776	781	788	806	828	842	836	835	835	834	816	800	790	774	783	778	775	755	760	770
5	775	774	772	779	773	779	779	771	785	797	798	807	809	802	816	810	799	794	787	768	771	764	767	774	767
6	774	776	778	778	777	777	782	790	805	807	810	819	807	807	797	810	799	799	775	779	783	784	780	776	780
7	782	782	784	785	781	784	782	781	786	792	794	795	795	806	810	812	811	798	791	786	780	787	787	788	788
8	787	787	788	788	790	785	790	795	803	815	895	831	825	820	820	818	818	800	792	795	792	792	787	790	792
9	792	793	787	790	791	789	794	800	808	812	819	822	818	827	830	814	806	794	793	796	793	796	785	786	792
10	792	789	774	800	795	796	793	798	812	812	825	815	810	806	799	789	806	800	787	777	780	771	773	771	770
11	777	783	783	785	787	786	793	797	807	815	814	810	802	791	780	777	792	780	773	781	765	768	768	761	775
12	782	774	771	785	792	783	784	784	802	807	805	823	910	809	781	767	765	768	765	765	712	777	776	776	777
13	776	790	784	789	788	788	795	805	810	810	814	815	804	800	789	783	985	781	781	777	777	777	779	780	780
14	781	777	780	783	783	788	788	789	798	806	814	806	802	789	776	764	761	761	763	770	773	781	781	781	783
15	785	788	983	788	785	788	793	705	790	810	821	818	804	790	767	759	759	747	749	750	746	746	746	756	752
16	759	761	759	969	764	764	768	771	776	785	791	790	738	779	769	760	757	753	755	757	756	756	756	757	753
17	760	760	760	761	760	763	765	765	778	800	799	799	795	791	791	791	789	772	764	760	750	760	760	763	760
18	766	767	767	766	766	767	775	786	805	814	815	810	809	804	803	791	769	742	733	730	756	756	757	757	763
19	747	747	746	750	754	758	766	774	780	795	779	755	769	773	777	775	755	724	696	710	745	747	753	748	
20	769	767	765	770	773	775	762	770	785	778	782	784	780	786	789	779	772	762	765	769	770	791	769	770	
21	757	759	760	760	760	760	767	773	782	790	790	799	787	786	789	779	772	762	765	769	770	791	769	770	
22	768	763	770	766	767	768	782	775	786	805	805	808	807	803	792	785	783	779	779	779	776	778	780	773	
23	769	776	773	775	771	767	766	770	790	810	820	820	818	818	818	830	810	769	751	740	743	760	760	756	756
24	763	749	742	765	765	756	755	760	747	782	794	805	807	796	794	786	785	772	761	742	748	747	750	763	
25	769	764	761	772	772	767	770	778	797	814	820	822	815	804	796	795	772	767	764	765	770	774	773	774	
26	772	778	775	770	775	780	780	785	793	800	803	819	808	799	793	789	789	784	779	778	780	780	780	781	
27	780	780	779	776	776	777	781	780	787	802	813	816	807	803	795	985	777	751	784	764	779	779	776	777	
28	778	774	776	776	776	776	783	790	799	806	808	814	818	812	794	786	781	780	785	784	781	781	781	779	
29	776	785	782	780	780	779	782	781	787	796	810	820	821	815	802	793	792	789	785	787	820	801	795	793	
30	794	790	789	793	790	792	770	753	755	740	760	770	775	757	752	760	757	754	767	770	775	764	760	767	
31	740	790	744	774	730	675	680	710	750	770	762	755	744	720	725	732	737	732	731	732	736	742	742	740	
Mean	774	776	773	777	776	774	777	781	792	802	807	809	803	799	792	786	780	771	768	769	771	770	771	772	

\* LOCAL TIME = GMT + 7 HOURS.

TABULATED VALUES ARE THE LAST THREE DIGITS ONLY OF THE TOTAL FIELD STRENGTH (F) IN  $\gamma$ .  
 TO OBTAIN TOTAL FIELD STRENGTH IN  $\gamma$  ADD 41,000

DB-4240-



Table II

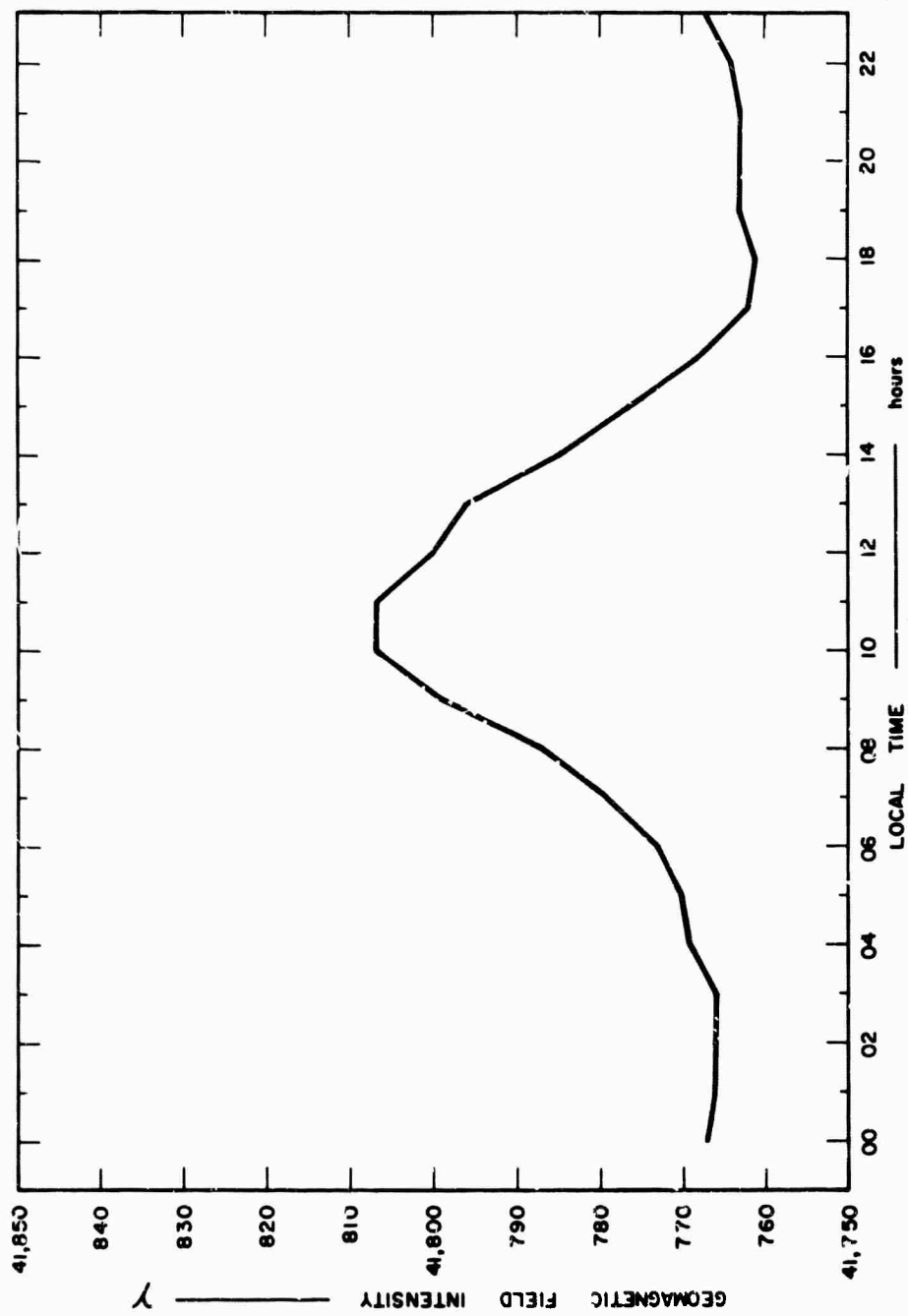
MEAN HOURLY TOTAL GEOMAGNETIC FIELD INTENSITY (F) AT BANGKOK -- SEPTEMBER 1966

* Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	741	756	742	740	737	733	745	746	759	762	737	767	766	763	760	747	744	720	734	760	737	737	757	738
2	725	740	741	731	726	742	737	741	741	766	773	770	767	755	759	762	767	758	759	760	770	765	752	747
3	756	760	765	765	766	769	765	776	762	811	824	820	794	783	779	726	685	663	670	700	700	682	680	666
4	754	662	660	695	734	699	643	529	552	553	582	620	580	587	585	583	584	594	598	625	653	656	669	659
5	684	680	693	681	691	682	694	692	700	708	715	717	724	714	712	714	714	714	710	696	709	694	700	704
6	700	695	699	700	704	721	732	731	745	754	744	734	747	736	740	725	704	707	710	711	702	701	740	725
7	729	729	725	724	726	732	735	741	746	757	766	761	756	746	745	734	734	737	735	720	724	720	707	710
8	716	716	717	719	726	731	739	740	747	765	737	760	747	726	721	705	695	650	662	693	682	683	714	686
9	692	701	707	718	710	716	718	730	747	765	765	771	762	726	725	722	720	715	705	708	711	722	722	743
10	729	727	729	730	727	730	735	726	730	741	743	740	741	734	743	750	738	716	712	725	729	739	740	721
11	732	742	743	740	741	740	740	746	751	770	779	782	780	764	758	759	756	754	752	749	742	741	740	745
12	742	744	743	744	743	744	744	747	755	770	784	785	774	766	762	750	740	740	740	740	741	741	744	739
13	739	741	747	745	750	751	750	753	755	766	774	760	765	765	762	759	754	752	655	740	745	741	740	743
14	748	748	750	749	749	750	752	761	780	800	812	811	802	795	780	773	789	769	766	765	763	770	771	762
15	752	762	752	750	763	768	763	740	769	790	784	776	766	757	757	750	731	739	744	731	744	747	745	743
16	744	745	744	737	742	742	737	732	739	764	782	787	782	779	776	765	760	759	760	749	750	751	752	752
17	746	745	744	745	745	747	757	752	763	777	767	777	773	767	760	760	758	755	753	755	751	749	744	746
18	746	749	749	751	751	749	752	767	783	796	794	867	779	775	767	759	757	753	750	744	743	750	755	759
19	761	760	760	759	760	763	763	760	760	790	834	867	817	812	795	774	774	774	772	764	754	747	752	752
20	754	757	760	761	762	760	745	762	783	797	812	822	814	799	789	739	750	755	758	738	727	719	717	732
21	737	746	755	746	744	740	740	740	755	768	766	782	781	787	780	765	755	744	746	740	751	740	742	746
22	746	745	745	744	745	743	746	745	757	771	795	797	797	789	778	760	753	749	747	746	745	747	751	753
23	746	744	744	742	751	750	751	750	759	773	788	791	793	785	771	761	792	784	771	759	762	751	742	749
24	739	705	720	736	735	734	745	757	770	793	807	808	798	786	780	760	741	--	--	--	--	--	--	--
25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mean	735	733	734	736	739	739	739	736	747	763	766	775	766	759	754	745	737	730	726	732	732	732	734	732

\* LOCAL TIME = GMT + 7 HOURS.

TABULATED VALUES ARE THE LAST THREE DIGITS ONLY OF THE TOTAL FIELD STRENGTH (F) IN  $\gamma$ .  
TO OBTAIN TOTAL FIELD STRENGTH IN  $\gamma$  ADD 41,000

DB-4240-



DB-4240-563

FIG. 1 MONTHLY MEAN TOTAL GEOMAGNETIC FIELD INTENSITY (F) AT BANGKOK — JULY 1966

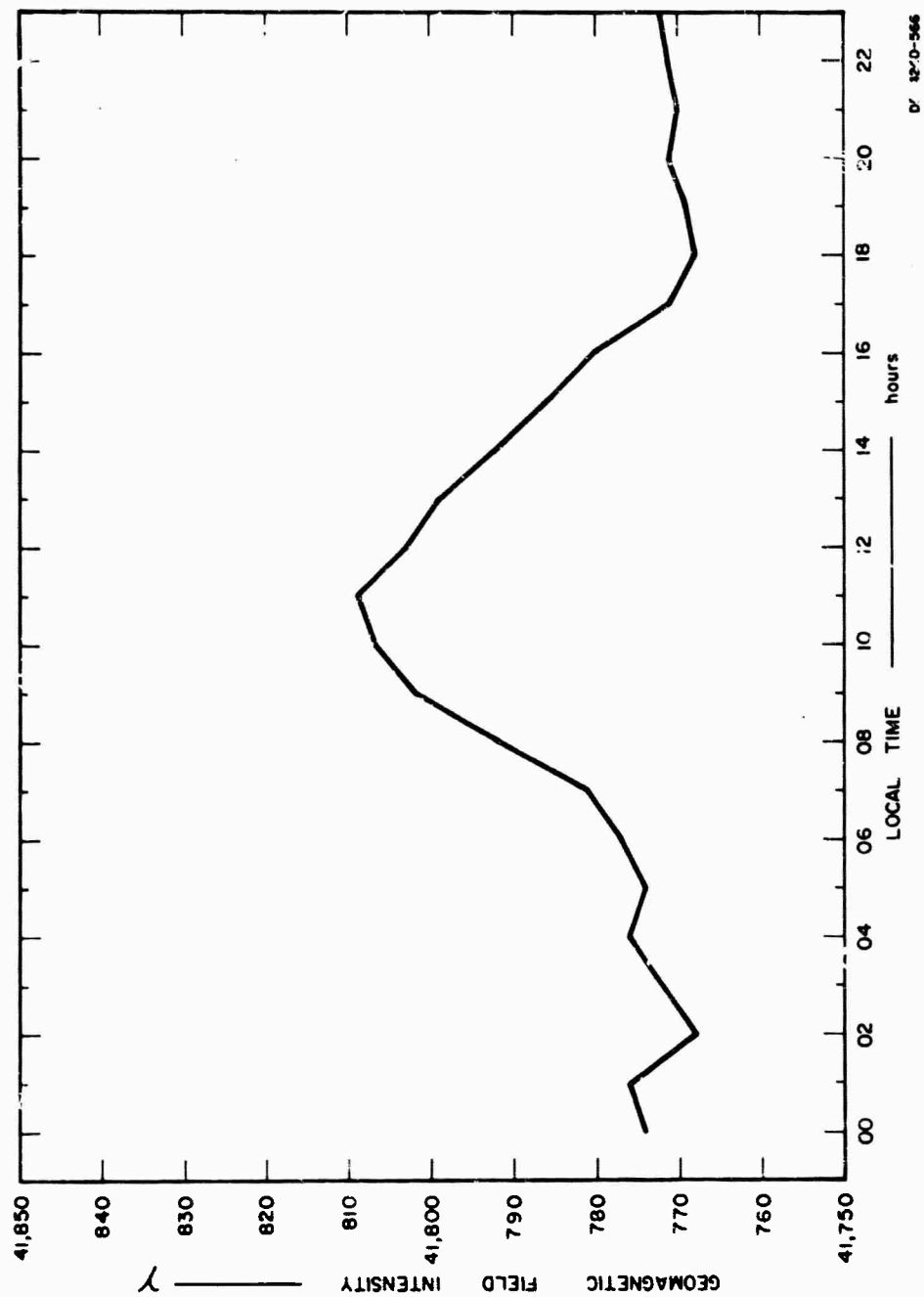


FIG. 2 MONTHLY MEAN TOTAL GEOMAGNETIC FIELD INTENSITY (F) AT BANGKOK — AUGUST 1966

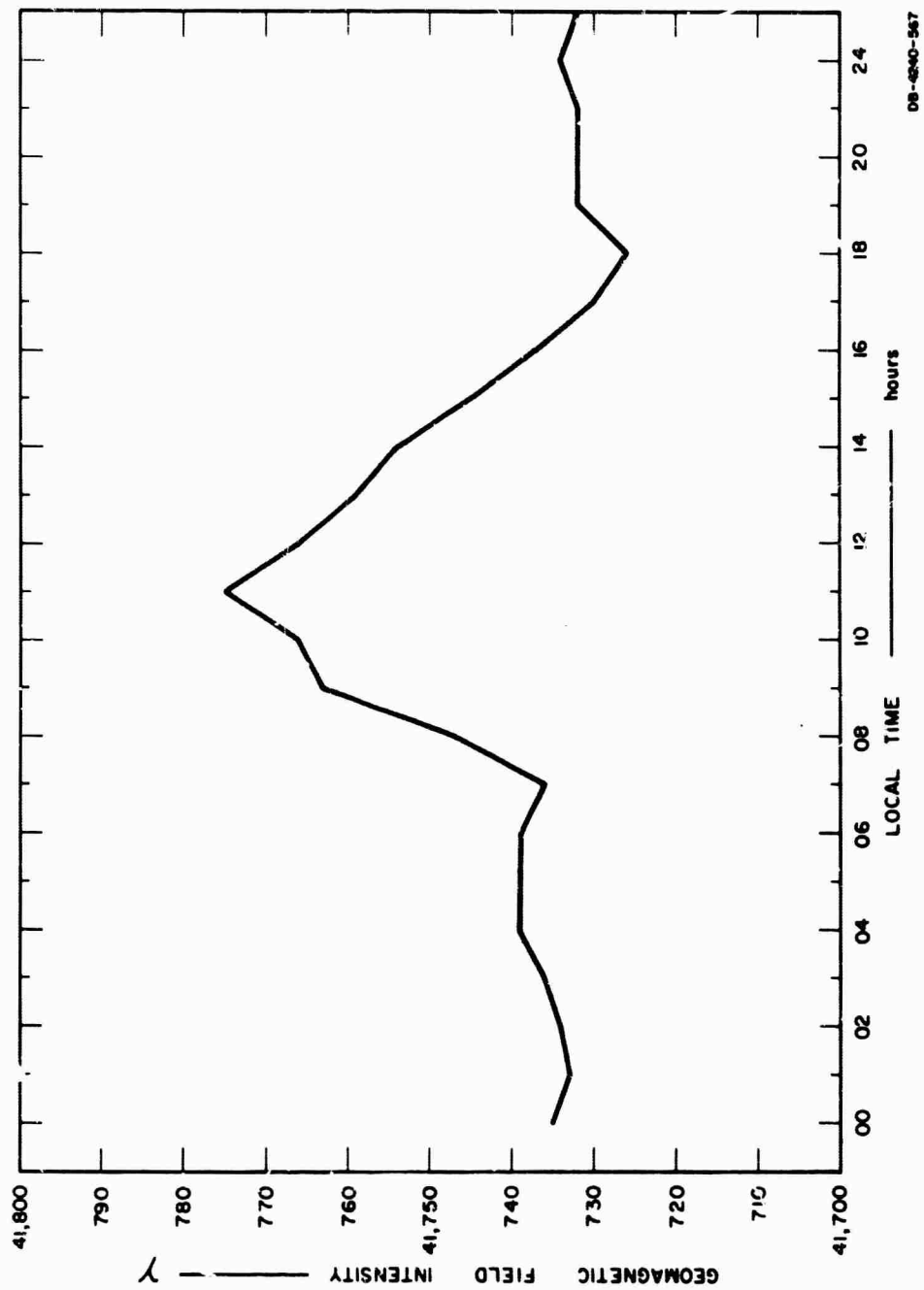


FIG. 3 MONTHLY MEAN TOTAL GEOMAGNETIC FIELD INTENSITY (F) AT BANGKOK — SEPTEMBER 1966

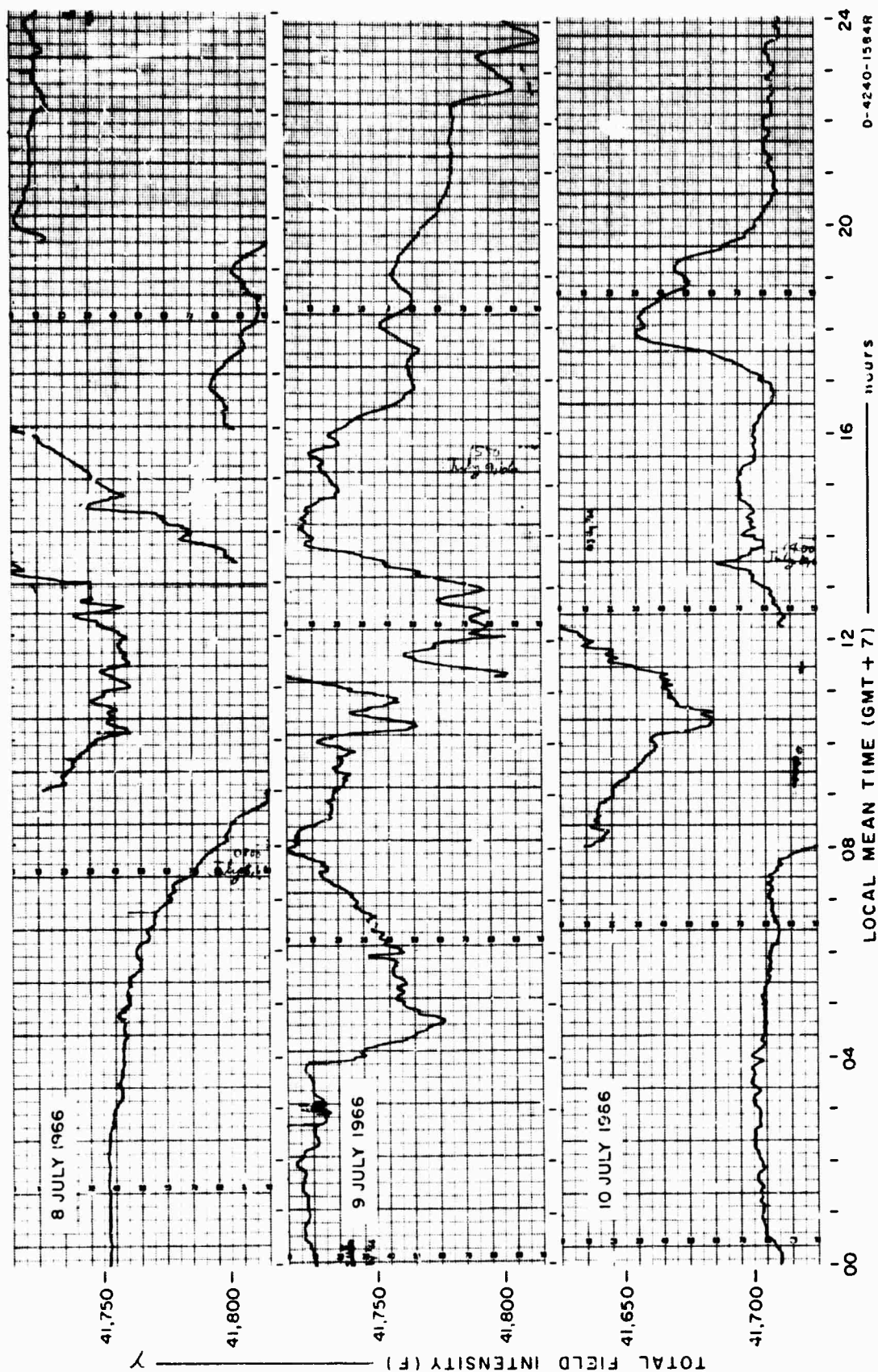


FIG. 4 MAGNETOGRAMS FOR THE THREE MOST DISTURBED DAYS IN JULY 1966

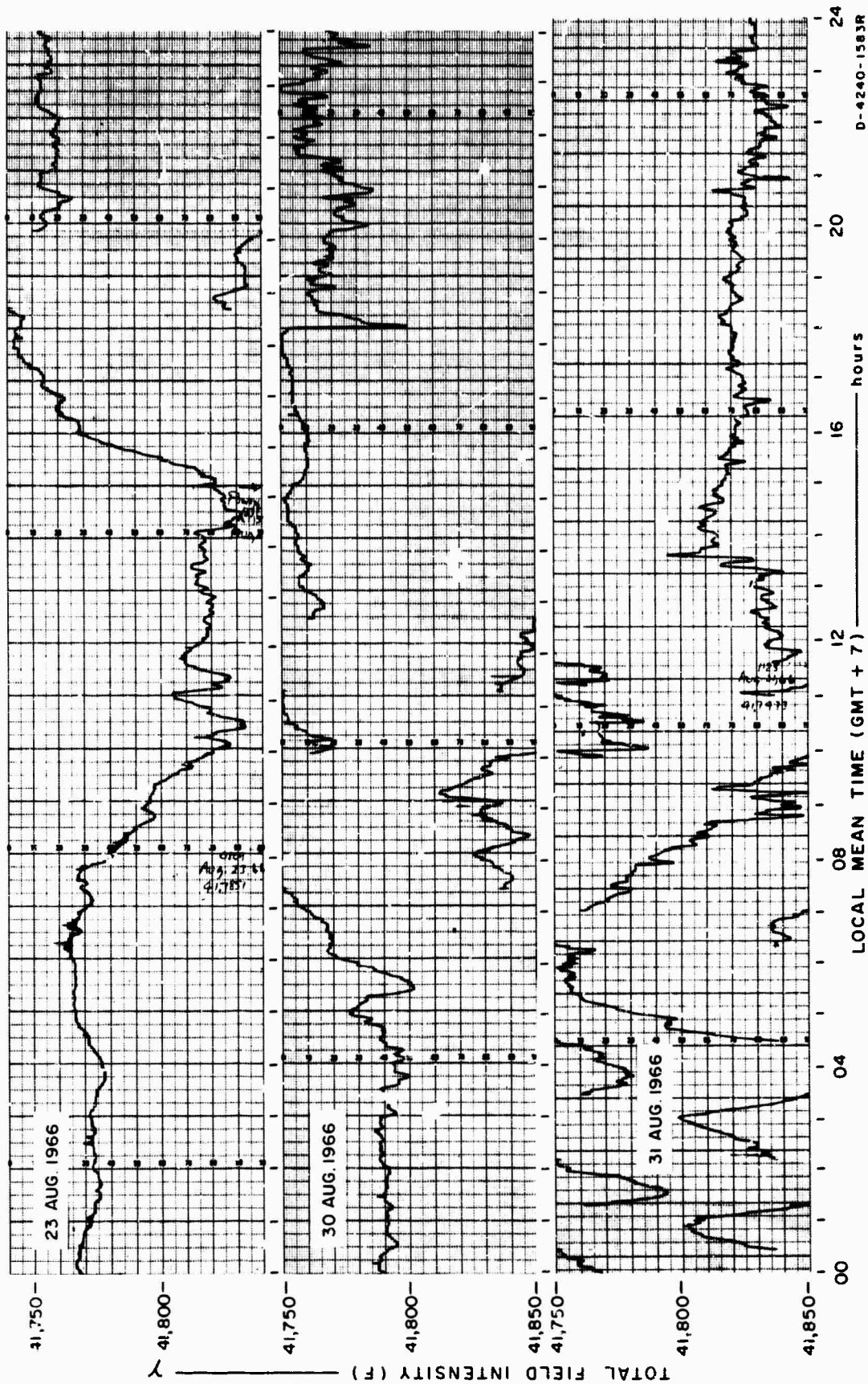


FIG. 5 MAGNETOGRAMS FOR THE THREE MOST DISTURBED DAYS IN AUGUST 1966



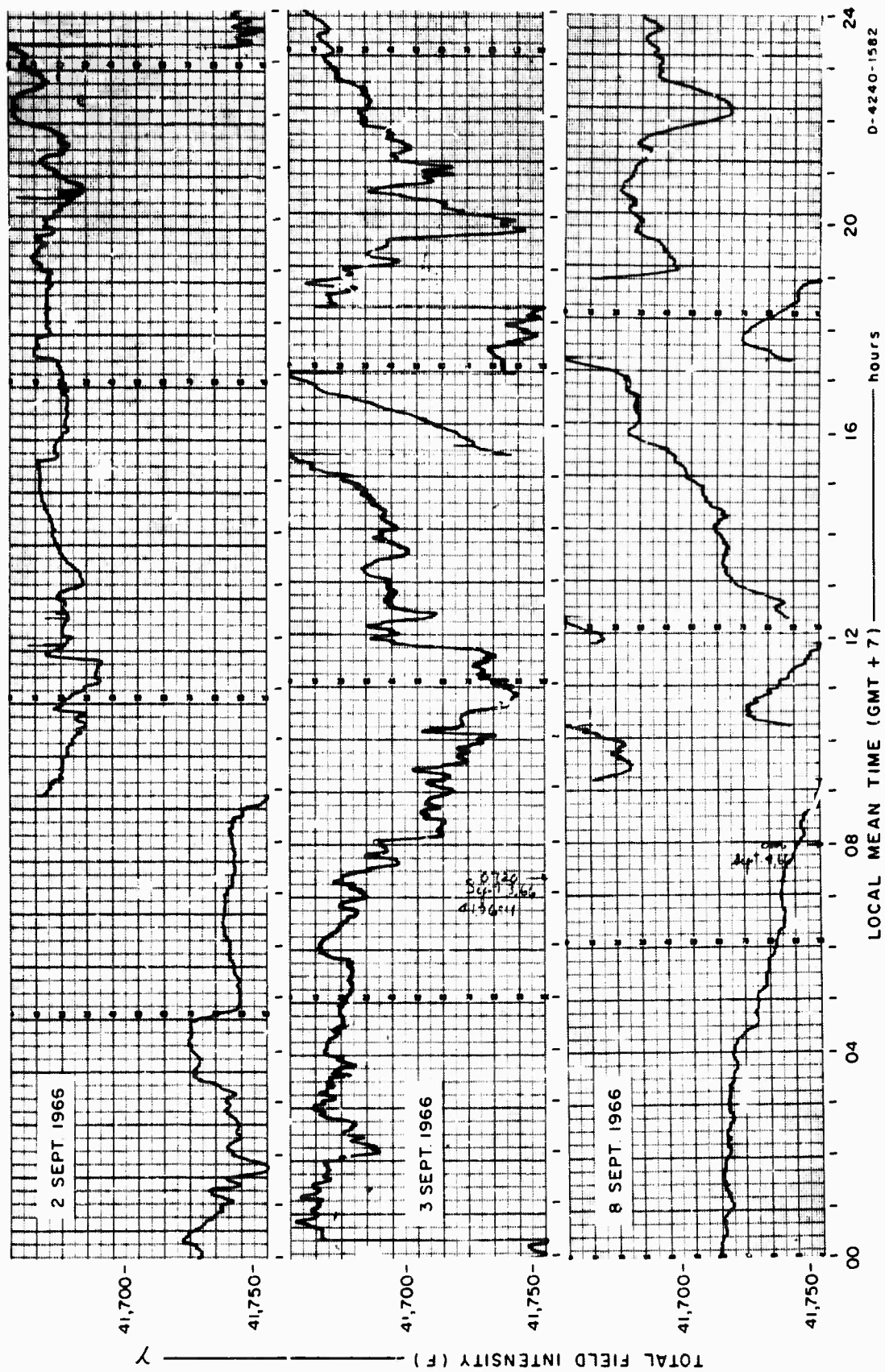


FIG. 6 MAGNETOGRAMS FOR THE THREE MOST DISTURBED DAYS IN SEPTEMBER 1966

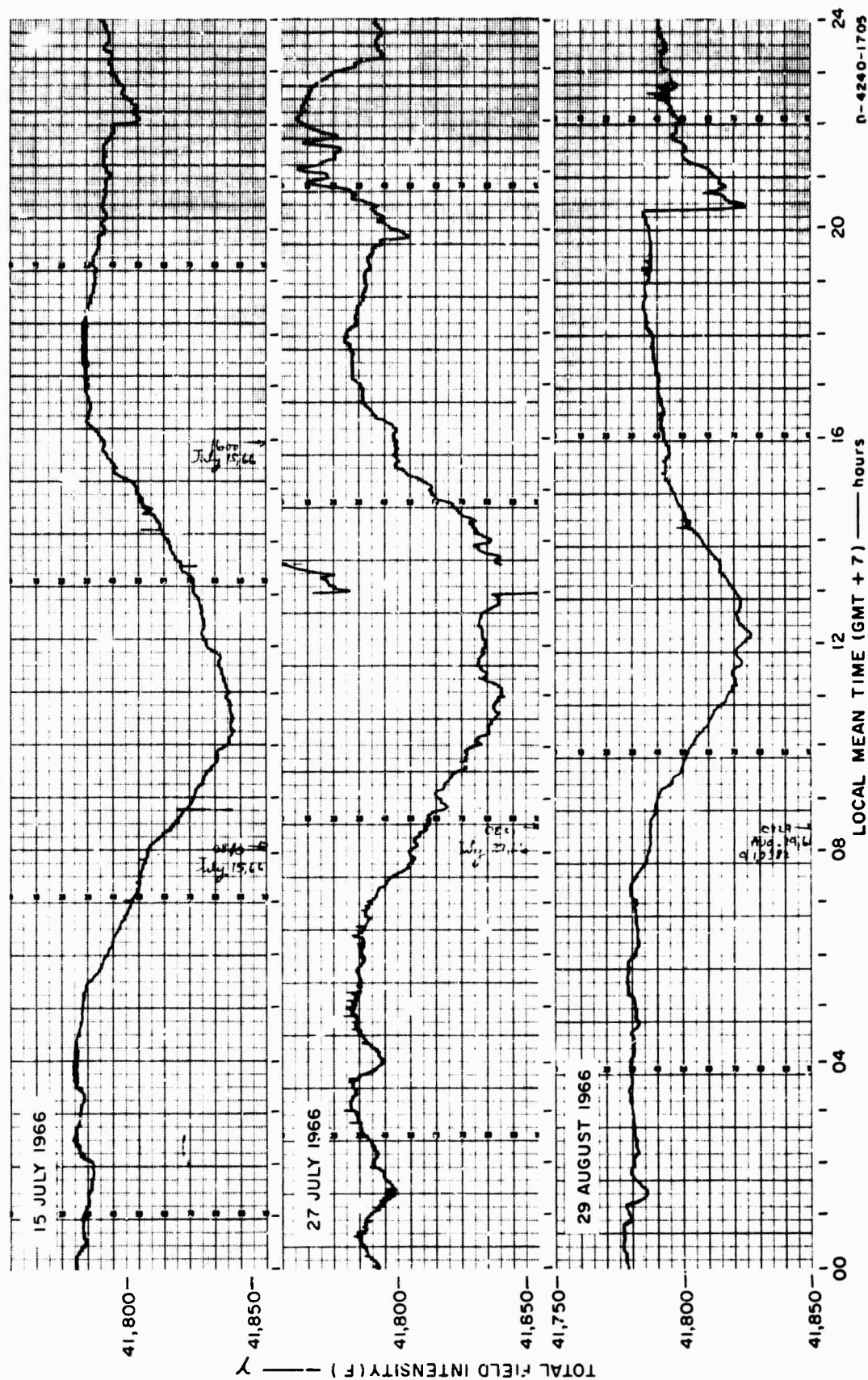


FIG. 7 MAGNETOGRAMS FOR DAYS OF SUDDEN COMMENCEMENTS: JULY AND AUGUST



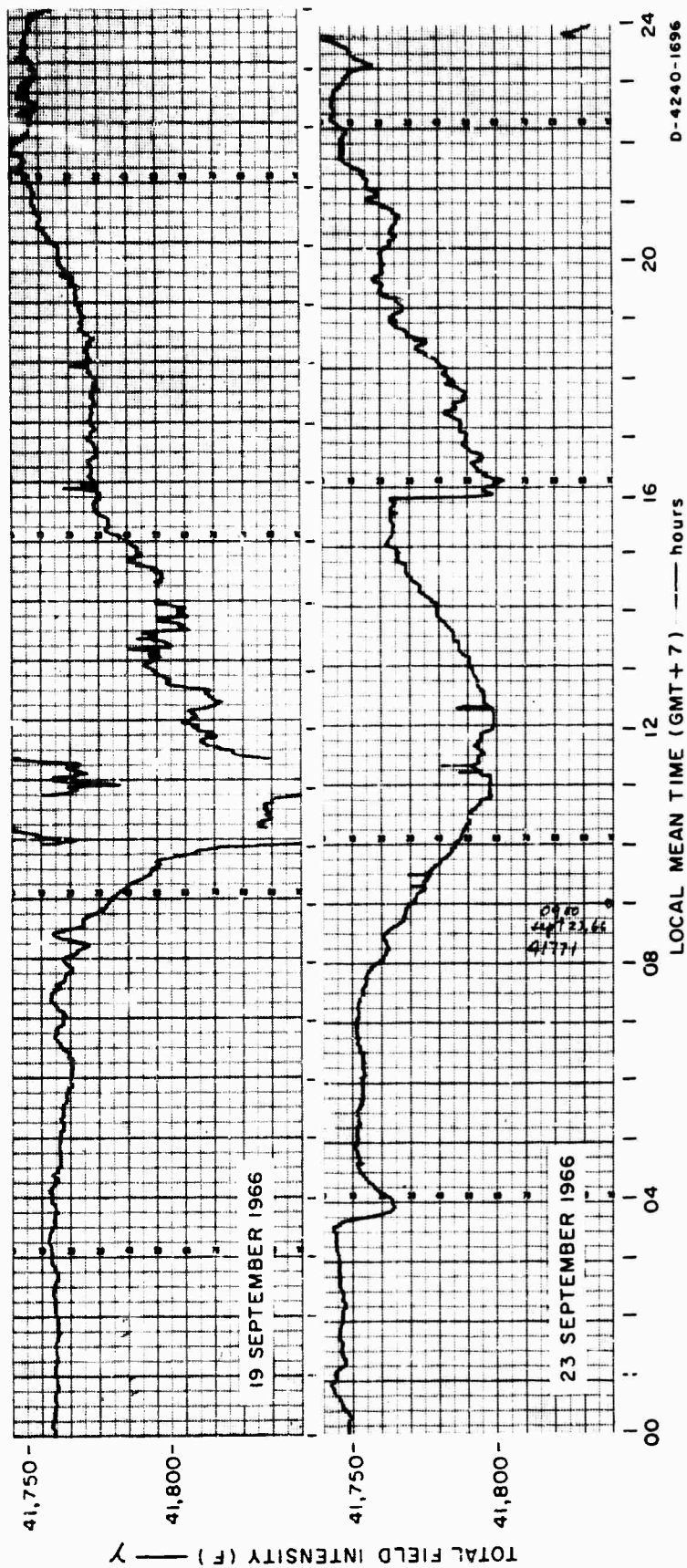


FIG. 8 MAGNETOGRAMS FOR DAYS OF SUDDEN COMMENCEMENTS: SEPTEMBER

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14 KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
Magnetometer						
Total field intensity						
Rubidium vapor						
Magnetograms on disturbed days						
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